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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,386	10/15/2003	J. Christopher Moulder	A03P1070	2107

36802 7590 04/11/2007

PACESETTER, INC.
15900 VALLEY VIEW COURT
SYLMAR, CA 91392-9221

EXAMINER	
MALAMUD, DEBORAH LESLIE	
ART UNIT	PAPER NUMBER
3766	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,386	MOULDER ET AL.	
	Examiner	Art Unit	
	Deborah Malamud	3766	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6,8,9,11,12 and 20-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6,8,9,11,12 and 20-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 16 February 2007 has been entered.

2. Claims 2-3, 7, 10 and 13-19 are cancelled; claims 1, 4-6, 8-9, 11-12 and 20-26 are pending.

Response to Arguments

3. Applicant's arguments with respect to claims 1 and 20 have been considered but are moot in view of the new grounds of rejection. In view of the amendments to, and cancellation of, the claims, the examiner withdraws the rejection of claims 13-17 under 35 U.S.C. 102(b) as being anticipated by Mulhauser (U.S. 6,208,896); of claims 1, 4-7, 9-11, 13-17, 20-23 and 25 under 35 U.S.C. 102(b) as being anticipated by Brink (U.S. 5,725,560); of claims 8 and 26 under 35 U.S.C. 103(a) as being unpatentable over Brink (U.S. 5,725,560); of claim 18 under 35 U.S.C. 103(a) as being unpatentable over Mulhauser (U.S. 6,208,896) or over Brink (U.S. 5,725,560); of claims 12 and 24 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brink (U.S. 5,725,560); and of claim 19 under 35 U.S.C. 102(b) as

anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mulhauser (U;S. 6,208,896) or over Brink (U.S. 5,725,560).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 4-5, 9, 11, 20, 22-23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Ostroff et al (U.S. 2003/0088281). Regarding claims 1, 20 and 25, Ostroff discloses (par. 0019-0024; Figure 1) an "H bridge circuit (13) and a drive circuit (15) for supplying voltage or energy to the H bridge circuit." The H bridge comprises "first and second high side switches (H_1, H_2) and first and second low side switches (L_1, L_2). The switches (H_1, H_2; L_1, L_2) may be manipulated to appropriately and selectively apply a voltage present at junction (17) across a patient indicated by a patient resistance R_{PAT}." The examiner considers this to be an output adapted for connection across a load; a charging circuit; and an H bridge including a first leg and a second leg, each leg including a first switching device. The drive circuit includes "a plurality of energy storage devices in the illustrative form of four capacitors (C_1, C_2, C_3, C_4). Across each capacitor is connected a respective secondary (I_1, I_2, I_3, I_4) of a transformer (T_1).

The primary of the transformer is switchable via a switch SW_2 to connect to a source of D.C. voltage V_s, e.g., a battery." The capacitors (C_2, C_3, C_4) have terminals, which are switchable via respective switches (SW_2, SW_3, SW_4) to establish or remove electrical connection to the junction. The examiner considers this to be voltage storage device, which is a first capacitor coupled between the charging circuit and the output; and a (second) capacitor switchably coupled across the voltage storage device and the output. The capacitors (C_1, C_2, C_3, C_4) are charged to a common voltage level V. Next, the high side switch H_1 and the low side switch L_1 are closed while H_2 and L_2 are open, thereby connecting the voltage on the capacitor C_1 across patient resistor R_{PAT}. In Figure 2, at time t_1, "a switching signal Φ_2 (Fig. 3) is activated to close the switch SW_2. The patient voltage initially rises back up to its original value and then begins to decay with a time constant equal to $R(C_1 + C_2)$. At a selected time t_2, a switching signal Φ_3 is activated, closing the switch SW_3 and connecting to voltage across the capacitor C_3 to the junction. As shown in FIG. 2, the patient voltage again rises to V_{PAT} and thereafter begins to decay with a time constant equal to $R(C_1 + C_2 + C_3)$. Then, at time t_3, the switching signal Φ_3 is activated, closing the switch SW_4, thereby applying the voltage across the capacitor C_4 and to the junction, again resulting in the voltage rising back to its initial value and thereafter decaying with a time constant $R(C_1 + C_2 + C_3 + C_4)$. Finally, at time t_1, the switches H_1, L_2 are opened, thereby terminating the first phase of the waveform." The examiner considers this to be pulse-width modulation circuitry operative to provide a pulse waveform; wherein the first switching device is operative to receive the pulse waveform, and alternately couple and decouple the voltage storage

device (first capacitor) across the (second) capacitor and the output in accordance with the pulse waveform to provide a stimulation output having a pulse-width modulated waveform; and wherein the (second) capacitor is operative to receive current from the voltage storage device (first capacitor) when the voltage storage device is coupled across the output and to supply current to the output when the voltage storage device is decoupled along the output.

6. Regarding claims 4-5, Ostroff discloses (par. 0025) "switches H_1, L_2 may then be closed to produce a conventional second phase 19 of a biphasic waveform. This waveform drops to a voltage (V_{PAT}) and then decays with a time constant determined by the patient resistance (R_{PAT}) and the effective value of the parallel capacitors (C_1, C_2, C_3, C_4). An inverted biphasic waveform may also be produced by first activating H_2 and L_1.". The examiner considers this to be a second switching device that controls the polarity of the stimulation output; and a polarity control circuit coupled to the second switching device, wherein the second switching device is operative to receive a control signal from a polarity control circuit.

7. Regarding claim 9, Ostroff discloses, (par. 0022) "The respective second terminals of the capacitors (C_2, C_3, C_4) are connected to the respective cathodes of respective diodes (D_2, D_3, D_4). The respective anodes of the diodes (D_2, D_3, D_4) are connected to respective first terminals of the secondary windings (I_2, I_3, I_4), whose second terminals are connected to ground." The examiner considers this to be an inductor coupled in series with the legs of the H bridge and a pair of blocking diodes coupled to the inductor.

8. Regarding claims 22-23, the examiner the H bridge of Figure 1 to be an H bridge with a polarity of legs; each leg, as discussed above, includes a pulse width modulation device and a polarity control device.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostroff et al (U.S. 2003/0088281) in view of Brink (U.S. 5,725,560). Ostroff discloses the claimed invention except for a comparison circuit. Brink however discloses, (col. 2, lines 56-67) "Each stored waveform preferably comprises a sequence of digital numeric amplitude values, with successive values representing amplitudes of a waveform at successive points in time. Alternatively, one or more stored waveforms can be represented as one or more mathematical equations, such as A sin x, (where A is the amplitude, and where x is from 0-2π for a monophasic waveform, and from 0-2π for a biphasic waveform), or in some other format understandable by waveform generator (34). Any information stored in memory (36) that is used to give the defibrillation waveform a desired shape is considered a 'stored waveform.'" Ostroff and Brink both disclose systems including H bridges for pulse-width waveform modulation. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ostroff's implantable cardiac stimulation device output circuit with Brink's

comparison circuit in order to provide a pulse waveform of known properties and efficacy.

11. Claims 8, 12, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ostroff et al (U.S. 2003/0088281). Regarding claims 8 and 26, Ostroff discloses the claimed invention but does not disclose expressly the non-polar capacitor. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the capacitor of Ostroff, with the non-polar capacitor, because the applicant has not disclosed the non-polar capacitor provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the applicant's invention to perform equally well with the capacitor as taught by Ostroff, because it is able to provide an output voltage to the switch amplifier in such a way as to control the waveform of the signal. Therefore, it would have been an obvious matter of design choice to modify Ostroff's capacitor to obtain the invention as specified in the claim.

12. Regarding claims 12 and 24, Ostroff discloses the claimed invention except for a third leg of the H bridge. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a third leg for an H bridge, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8. See MPEP § 2144.04.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Malamud whose telephone number is (571) 272-2106. The examiner can normally be reached on Monday-Friday, 9.00am-5.30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Layno can be reached on (571) 272-4949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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